

We claim:

1. A catalytic process for the production of pyridine and picolines which comprises contacting a mixture of a carbonyl compound and ammonia in the presence of zeolite catalyst with MFI topology in gas phase, condensing and separating the products.
2. A process as claimed in claim 1 wherein the contacting between the carbonyl compound and ammonia in the presence of the zeolite catalyst is carried out at a temperature in the range of 300 – 500°C, at a gas hourly space velocity in the range of 300 to 3000 h⁻¹ and pressure in the range of 1 to 10 atmosphere.
3. A process as claimed in claim 1 wherein the products obtained are separated and purified.
4. A process as claimed in claim 1 wherein the carbonyl compound is selected from the group consisting of an aldehyde, a ketone and any mixture thereof.
5. A process as claimed in claim 4 wherein the aldehyde is an aliphatic aldehyde with 1 to 5 carbon atoms selected from the group consisting of formaldehyde, acetaldehyde, propionaldehyde and butyraldehyde.
6. A process as claimed in claim 4 wherein the ketone is an aliphatic ketone having 3 to 5 carbon atoms and selected from the group consisting of acetone, methyl ethyl ketone, and diethyl ketone.
7. A process as claimed in claim 1 wherein the catalyst has molecular formula 1SiO₂:x MO₂, where M= Zr or Sn or a mixture thereof, and x is in the range of 0.002 and 0.05, with a crystal structure characterized by powder X-ray diffraction pattern as given in Table (1).

TABLE (1)

No.	2 theta, degree	Relative intensity ^a	No.	2 theta, degree	Relative intensity ^a
1	7.86 ± 0.05	S	14	20.80 ± 0.05	MW
2	8.78 ± 0.05	MS	15	22.20 ± 0.05	MW
3	13.18 ± 0.05	W	16	23.08 ± 0.05	VS
4	13.86 ± 0.05	MW	17	23.90 ± 0.05	S
5	14.74 ± 0.05	MW	18	24.40 ± 0.05	MS
6	15.46 ± 0.05	MW	19	25.69 ± 0.05	MW
7	15.89 ± 0.05	MW	20	25.89 ± 0.05	W
8	16.48 ± 0.05	MW	21	26.64 ± 0.05	W
9	17.26 ± 0.05	W	22	27.42 ± 0.05	W
10	17.64 ± 0.05	W	23	29.26 ± 0.05	W
11	17.82 ± 0.05	W	24	29.90 ± 0.05	MW
12	19.22 ± 0.05	W	25	45.10 ± 0.05	W
13	20.36 ± 0.05	MW	26	45.52 ± 0.05	W

a: R.I. = Relative Intensity, vs = very strong, s = strong, m = medium, w = weak

8. A process as claimed in claim 1 wherein the catalyst comprises a zeolite containing zirconium and/or tin and silicon as zeolite constituent elements wherein the atomic ratio

of silicon to zirconium and/or tin is about 10 to about 500 and more preferably about 20 to about 100.

9. A process as claimed in claim 1 wherein the zeolite catalyst is loaded with a metal selected from the group consisting of lead, nickel, thallium and any mixture thereof using conventional impregnation method, where the metal loading is in the range of 3 and 12 wt%.
10. A process as claimed in claim 1 wherein the zeolite catalyst is in the form of a solid powder catalyst.
11. A process as claimed in claim 10 wherein the zeolite catalyst is mixed with inert binding substances selected from the group consisting of silica, alumina and any mixture thereof and shaped into extrudates or pellets as desired, dried and calcined or spray dried to a particle size in the range of 50 – 100 microns.